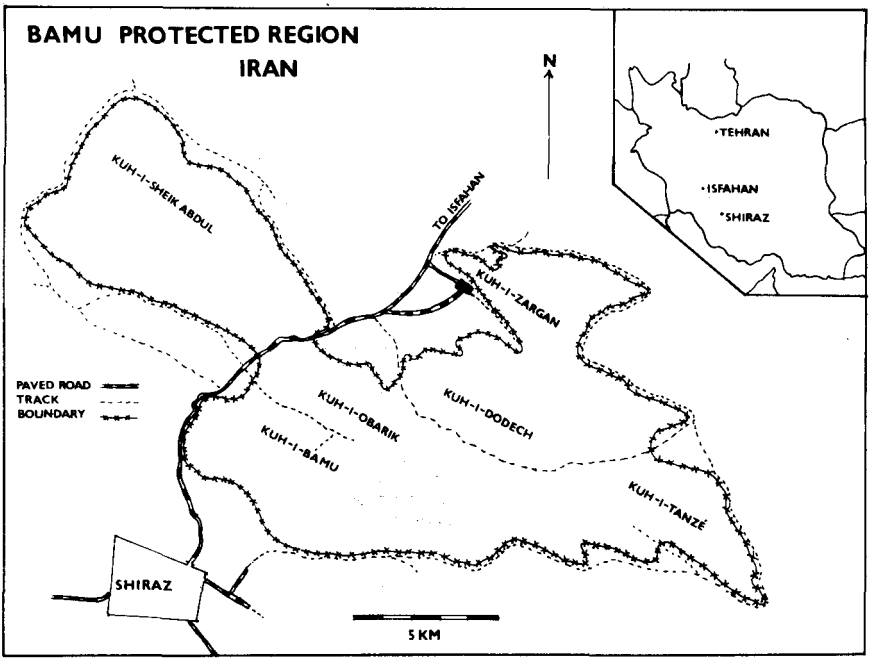

Wildlife of a Mountain Reserve in Iran

M. E. Taylor

The Bamu Protected Region, created in 1963, is primarily a restricted hunting area and game reserve of 47,400 hectares. It is not generally open to the public, though special permission to visit it can be obtained from the Department for Environmental Conservation.

The reserve lies north of Shiraz and south of Persepolis. It is bisected by the Shiraz–Isfahan road, the larger and more mountainous area lying to the east. It is almost surrounded by unmade roads, making access easy for most of the year. Four main mountain chains run approximately east–west. The highest mountain, Kuh-i-Bamu, 2661 m. and visible from Shiraz, is geologically interesting in that it has been caused by an upheaval and folding of the surface, so that the older strata are near the top and the younger beneath. The highest points of the other mountains are about 2300 m.

From a distance the land appears rocky and arid. But in some parts, at certain times of the year, there may be an almost complete ground cover, in contrast to the surrounding areas which are intensively grazed by domestic herds of sheep and goats, and where the vegetation is cut for fuel. In the spring the valleys and some of the gentle mountain slopes may appear green from a distance, due to the new grasses and herbaceous plants, but this only occurs after wet winters and does not last. Rainfall for the winter of 1971–72 was

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high, about three times the 1970–71 figure of 122 mm, and consequently the spring vegetation was unusually lush. In the Shiraz region rainfall varies from about 100 mm to 420 mm a year. These fluctuations affect the amount of spring and early summer vegetation, and result in marked fluctuations in the numbers of domestic animals, and presumably also of wild animals. Temperature variations from year to year are small. In Shiraz January is the coldest month, with a mean around 5·9°C, and July the hottest with a mean around 28·2°C. In the mountains in the reserve the climate is more extreme, with considerable snow on north-facing slopes and in gullies: on one hilltop in February 1972 it was over a metre deep. The snow acts as a temporary reservoir, giving a gradual release of water in the spring, and thus permitting a longer growing season for many plants; large areas of deep snow also limit the forage available for herbivores. An analysis of the Iranian climate is given by Misonne (1959).

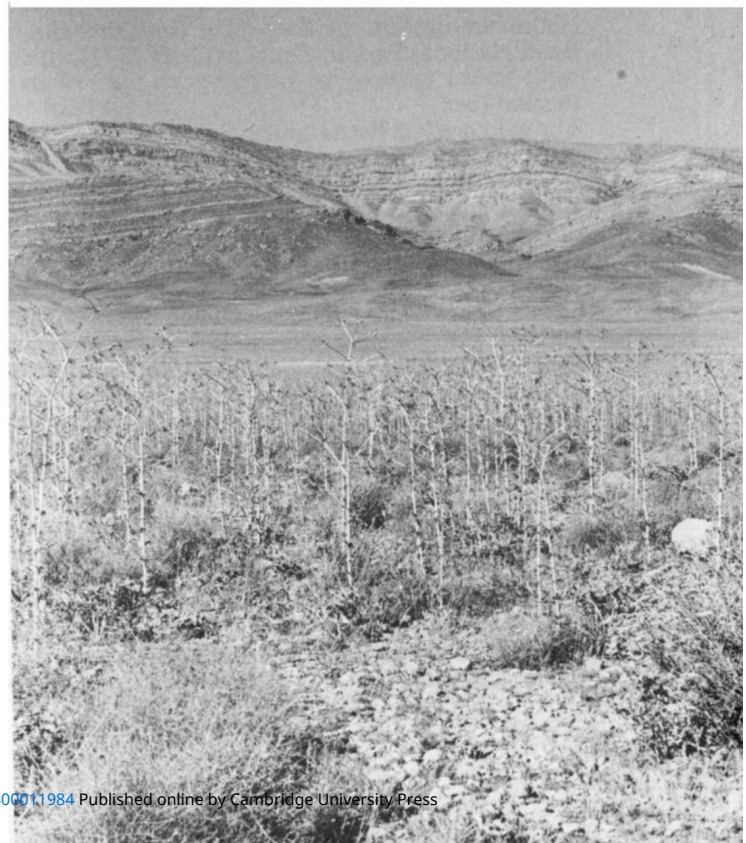
The game scouts of the Department of Environmental Conservation patrol the reserve both by vehicle and on foot, and this appears to deter most trespassers, nomadic tribesmen, and poachers. Domestic goats and sheep are kept out of most of the reserve, and the vegetation appears to be changing, many shrubs growing up where they were previously cut for fuel. A study of the long-term floristic changes would be well worth monitoring. The wildlife of the reserve is diverse despite the arid surroundings.

Asiatic Mouflon

The wild Asiatic sheep, or urial, *Ovis orientalis,* is the commonest large mammal in the reserve. During two one-day censuses in the spring of 1972, using eleven separate parties, we counted 1274 and 1170 sheep. In an hour's aerial census Dr F. Harrington, of the Department, counted 1246 sheep. From my observations I believe that these figures represent no more than 50 per cent of the total population. Seasonal movements in and out of the reserve occur, though the numbers and extent of these are not known.

This Asian wild sheep is smaller and more lightly built than the North American bighorn sheep. (A comprehensive account of the various races is given by Clarke 1964, and recent critiques are by Geist 1971, and Harrison 1968). A notable feature of the Bamu sheep is the large size of the herds; I have several times seen herds of 200–300. The herd structure and size varies during the year, and the larger ones are family herds in which the males are not usually more than about three years old. All-male herds of over three-year-olds may also be large, over 100 being counted on several occasions.

Rutting occurs in the autumn (October–November), and the young are born in the spring. In 1972 the first lambs, about two days old, were sighted on April 16th. The last birth, inferred from fresh blood in a likely lambing area, was on April 27th, so lambing can be assumed to last from two to three weeks. A high proportion of lambs in 1972 were twins (about half), though exact figures are difficult to calculate. This is because a few days after parturition, the mother and lamb(s) may join 'sterile' females and form small parties in



Above
WINTER—north-east of Kuh-i-Bamu

SUMMER. The thistles grow over three feet high. *M. E. Taylor*

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IBEX *Eskandar Firouz*

which the true ratio of lambs to mothers cannot be accurately estimated.

The sheep are regularly hunted throughout the year, the main objective being large horned males. Hunting is controlled by the Department through the issue of licences and the presence of game scouts in the hunting parties. The sheep are shy, their flight distance often being more than one kilometre, presumably as a result mainly of the hunting. In this they differ from the wild but 'tame' sheep in Banff National Park in Canada (Geist 1971) which are not shot.

Persian Ibex

The wild goat or Persian ibex *Capra hircus* is the second commonest large mammal in the reserve, though not often seen by visitors, as it is generally high in the mountains. A large population is centred on Kuh-i-Bamu and another large one on Kuh-i-Dodech to the north; they have been seen on other mountains too, and occasionally on lower hills. Whether they move from one mountain to another is not known, though local movements have been observed: from the north-facing slopes where they spend the summer, but where the snow builds up in winter, to the south-facing ones for the winter, because the snow there melts rapidly; they also move vertically, moving up a mountain as spring advances because the vegetation at lower altitudes starts growing first. By midsummer most of the rapid growth associated with winter rain is over, and the ibex tend to remain on the higher slopes. In winter they obtain water by eating snow or by drinking from holes in rocks filled with rain or melted snow, and in summer from the many natural springs.

In two censuses 316 and 266 ibex were counted respectively, and in an aerial census Dr. Harrington counted 214. These figures are undoubtedly on the low side. To escape small biting flies or avoid solar radiation, ibex often stand in caves and gullies, which makes them difficult to see. One herd of 120 males was counted on Kuh-i-Bamu; assuming that these did not represent all the males, and that

WILD SHEEP—a male about seven years old *M. E. Taylor*

there is at least an equal number of females, there would be at least 250–300 ibex on this mountain alone, and a conservative estimate of ibex in the reserve would be 500 ± 100.

Although ibex generally spend much of their time on the rocky mountain slopes while sheep are usually on the lower slopes and in the valleys, these habitats are in no way mutually exclusive. Sometimes sheep and ibex will intermingle, and on several occasions I have watched sheep feeding and moving among feeding and resting ibex without any interactions. The two species may utilise the same plants, and further studies are necessary to see to what extent they compete for the same food supply.

Two ibex and two sheep shot in the spring of 1972 were found to be free of external parasites, as were two other sheep examined in the winter; this I find unusual from previous experience with wild ungulates. One of the game scouts attributes this freedom from parasites to the animals eating certain plants.

Goitred Gazelle

The goitred or Persian gazelle *Gazella subgutturosa* is not common in Bamu; it is found only in the lower valleys in the north of the reserve. The highest number counted in any one census was 23, and the distribution of the different groups suggests that there are probably not more than 50. Occasional gazelle are seen outside, so there may be minor fluctuations in numbers. As the gazelle is protected, the commonest causes of mortality would be natural, though some animals may be poached. Hopefully their numbers will build up, but at the moment there is only one large valley suitable for gazelle which is also well protected from both domestic grazing and poaching. Twins and a single lamb were born there, to my knowledge, in 1972. No sightings of lambs were made for the other groups, so the total proportion of lambs cannot be estimated. Gazelles are not generally molested by humans, and they are relatively easy to watch.

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Leopard

Leopards *Panthera pardus* occur in the mountainous parts of the reserve. I saw none, but indirect evidence included tracks seen on at least five occasions and in two regions of the reserve, one on the north side of Kuh-i-Bamu and one on the easterly part of Kuh-i-Dodech. The remains of a recent kill found on a precipitous cliff-face—leopard rather than wolf or hyena habitat—consisted of one horn and a small part of a young female ibex cranium containing some fresh unclotted blood; it is unlikely that it had been brought on to the cliffs in such a short time by a scavenger such as jackal or fox, and presumably it was a leopard kill. Another find outside a hillside cave near Kuh-i-Bamu consisted of a 2- to 3-year-old sheep-horn sheath, some teeth and metapodials, also probably the remains of a leopard kill. To my knowledge, the last sighting of a leopard in the reserve was made eight years ago by one of the game scouts, who woke from his afternoon siesta in the shade of a small cave in the eastern end of Kuh-i-Dodech to see an adult leopard drinking from a spring 30 feet away. Leopards appear to be relatively common in this region; judging from reports by game scouts, and the occasional remains of sheep and ibex, there may be two pairs in the reserve. A friend, Lindon Cornwallis, has seen leopard on three occasions. There have been no recent attempts to hunt leopard in Bamu, though licences can still be obtained.

Other mammals in the reserve include jackals *Canis aureus,* seen four times, and also several times outside the reserve, mainly in the autumn and winter when the ground cover was minimal, and foxes *Vulpes vulpes,* seen on six occasions. The general reactions of several Iranians on seeing a distant jackal was to cry 'wolf' and drive away; only by insisting that they drive closer and take a good look could I convince them that they were wrong. Obviously, many reports of wolves are of dubious value, and it is doubtful that wolves *Canis lupus* occur in Bamu. On two occasions I saw what appeared to be an unusually large jackal, and since wolves in the Middle East are apparently smaller than their North American counterparts, it is possible that the animals I saw were in fact wolves. However, little is known about the wolf's distribution and behaviour in Iran.

Striped hyaenas *Hyaena hyaena* have not been reported in the reserve though there are reports of them in the vicinity. I saw two killed on the road about 20 km. south of the reserve, and heard one about 15 km. west of it, so it is quite likely that they occur. The noticeable lack of skeletal remains of sheep and ibex might be attributed to their efficient scavenging.

The wild boar *Sus scrofa* occurs in parts, particularly on the south-east side. No sightings were made, but fresh diggings were found in several areas where they had been searching for roots and shoots in the winter and early spring. Porcupines *Hystrix indica* are common throughout the reserve, quills being found on all the smaller mountains, and in the valleys. They are primarily nocturnal; one animal sighted at noon disappeared with great speed down a nearby small cave.

Few other mammals were seen: hares *Lepus arabicus* twice; pika

GOITRED GAZELLE
Eskandar Firouz

Ochotona rufescens once, at close quarters, on the north side of Kuh-i-Bamu, so presumably there is at least a small population on the mountain. No small rodents were seen, though some remains of a small microtine were found, and also remains of two hedgehogs, probably *Hemiechinus auritus*. The caves revealed no traces of bats, but supposedly there are colonies in caves in the northern region near Zargan. Feral dogs have been seen three times, once in the spring, worrying sheep. The game scouts tried to eliminate them. There is a great variety of birds and reptiles in the reserve, together with a few amphibians and fish.

The Bamu Protected Region is a useful area for scientific studies, but it also has great tourist potential, being easily accessible from the university town of Shiraz, which is well served by the domestic airline. It is only one of a number of game parks and reserves, and others are being formed, indicating a healthy outlook for the wildlife of this country.

Acknowledgments

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